

What is Claimed is:

1. A perpendicular recording head for use with magnetic storage media, said perpendicular recording head, comprising:

a main pole; and

means for concentrating magnetic flux from said main pole onto a small surface area of a magnetic recording medium.

2. A perpendicular recording head for use with magnetic storage media, said perpendicular recording head comprising:

a main pole having a tip, said main pole including:

a first layer of material having a saturation magnetic moment;

a second layer of material having a lower saturation magnetic moment lower than said saturation magnetic moment of said first layer; said second layer of material tapering towards said tip.

3. The perpendicular recording head according to claim 2, wherein:

said perpendicular recording head further comprises a flux return pole and a yoke, said yoke forming a magnetic coupling between said flux return pole and said main pole; and

said main pole's first layer is adjacent to said yoke.

4. The perpendicular recording head according to claim 2, wherein said first layer defines a leading edge of said main pole.

5. A perpendicular recording head according to claim 2, wherein said second layer comprises alloys of CoZrNb, CoZrTa, NiFe, or combinations thereof.

6. A perpendicular recording head according to claim 2, wherein said second layer has a saturation magnetic field not exceeding approximately 16 kG.

7. A perpendicular recording head according to claim 2, wherein said first layer comprises alloys of FeAlN, FeTaN, CoFe, CoFeNi, or combinations thereof.

8. A perpendicular recording head according to claim 2, wherein said first layer has a saturation magnetic field of at least approximately 16 kG.

9. A perpendicular recording head according to claim 8, wherein said first layer has a saturation magnetic field of at least approximately 20 kG.

10. A perpendicular recording head according to claim 2, wherein said main pole has a width less than approximately 0.10 m.

11. A perpendicular recording head according to claim 2, wherein said main pole has a thickness ranging from approximately 20 Å to approximately 5 µm.

12. A perpendicular recording head according to claim 11, wherein said main pole has a thickness ranging from approximately 1,000 Å to approximately 2,000 Å.

13. A method of making a perpendicular recording head, comprising the steps of:

providing a substrate upon which a read element, flux return pole, and yoke;

depositing photoresist, thereby defining a channel within said photoresist, said channel being dimensioned and configured to define a shape of a main pole;

depositing a first layer of material within said channel; and
depositing a second layer of material within said channel.

14. The method according to claim 13, wherein said steps of depositing a first layer and depositing a second layer further comprise the steps of depositing a material having a first saturation magnetic moment to form said first layer, and depositing a material having a second saturation magnetic moment to form said second layer, one of said saturation magnetic moments being low relative to the other of said saturation magnetic moments.

15. The method according to claim 14, further comprising the step of forming a taper within said material having a low saturation magnetic moment at a tip of said main pole.

16. The method according to claim 15, wherein said step of forming a taper within said material having a low saturation magnetic moment at a tip of said main pole comprises the steps of:

depositing a bi-layer photoresist on said first layer at said tip, said by-layer photoresist having a lower layer and an upper layer, said upper layer extending beyond said lower layer; and

depositing said second layer.